

SELENIUM PHOTOVOLTAIC CELLS

Models 594, 856 and 9950

TRANSDUCERS

03-204-B

FEATURES:

- Long term stability.
- Vibration and shock resistant, as typical of most solid state components.
- Wide usage in light actuated systems.
- Variety of housings for basic models.
- "VISCOR®", visual correction filters available for both models.
- Quartz or Inconel filters available.
- Cosine correction filter available except over quartz.
- Weather-proof housings available for the Model 856.
- Hermetic and non-hermetic sealed units.

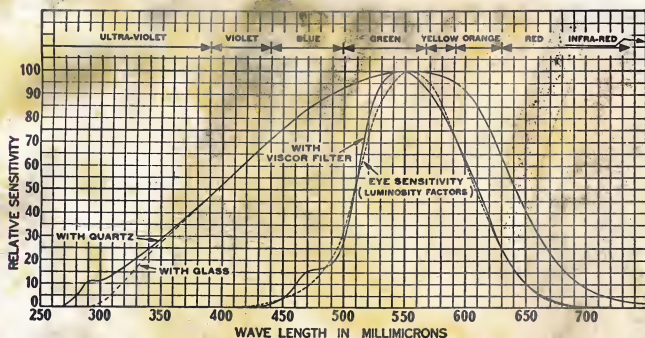


THE VISCOR® FILTER

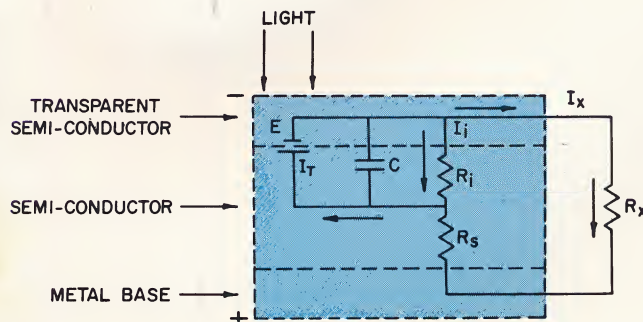
Viscor filters were developed for the specific purpose of making the effective spectral sensitivity of the PHOTRONIC® cell, assembled with filter, match the standard I.C.I. luminosity curve. In order to make the cell conform to this curve, it is necessary to reduce its blue and red response. The Viscor filter produces this effect by absorbing light, falling on the cell at normal incidence, in proportion to the required percent reduction in the cell response at each wavelength.

CELL RESISTANCES

The cell has an internal leakage path between electrodes which acts as a resistance in parallel with the external circuit, and has a surface resistance which acts in series with the external circuit (see below).



Spectral Sensitivity of PHOTRONIC Cells



Cross Sectional View of PHOTRONIC Cell
Illustrating Electron Flow (not to scale).

CELL CHARACTERISTICS

(Glass Windows Only)

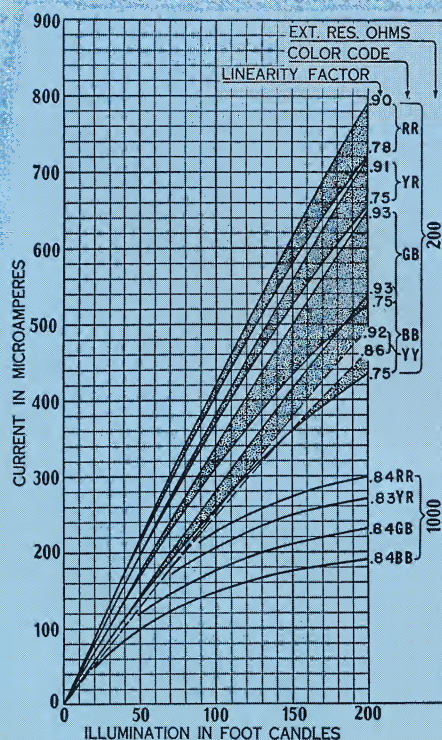
Microamps/Foot-Candle at 20 ft-c & 200 Ω	Linearity Ratio: Output at 200 ft-c to 20 ft-c at 200 Ω Min.	Color Code Identification
6 \pm 0.5	7.3	GG (Green-Green)
4.8 \pm 0.3	7.5	RB (Red-Blue)
4.4 \pm 0.3	7.6	RR (Red-Red)
4.0 \pm 0.3	7.7	YR (Yellow-Red)
3.5 \pm 0.5	7.8	GB (Green-Blue)
2.9 \pm 0.5	8.0	BB (Blue-Blue)
2.6 \pm 0.3	8.2	YY (Yellow-Yellow)

Notes:

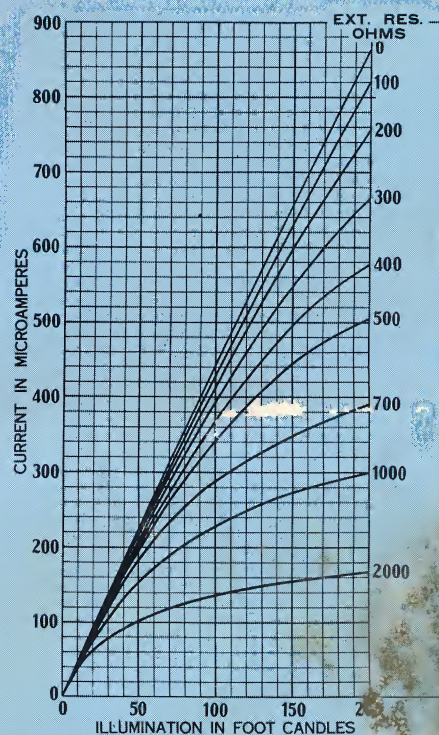
- 1—The above table also applies to quartz windows except a suffix "Q" is added to color code identification.
- 2—When a Viscor filter is used, multiply the microamps/foot-candle values by 0.4. A suffix "V" is used in the color code identification.
- 3—When a neutral density metal film (Inconel) filter is used, multiply the microamps/foot-candle values by 0.1. A suffix "I" is used in the color code identification.
- 4—When a Viscor plus Inconel filter combination is used, multiply the microamps/foot-candle values by 0.04. A suffix "VI" is used in the color code identification.
- 5—Based on the ratio of 200 to 20-foot-candles, 10 would indicate perfect linearity.

GENERAL INFORMATION

- 1—Any number of cells can be matched for required characteristics.
- 2—The most common characteristics tested are:
 - A — Linearity
 - B — Output and linearity
 - C — Spectral selection
 - D — Specific output and load
 - E — Fatigue or current drift which may vary with time of exposure, light intensity, external load resistance and/or spectral composition of the light source.
- 3—When matching linearity or output and linearity a 2% limit is held when tested at 20 ft-c and 200 ft-c with a load resistance of 200 ohms.
- 4—Spectrally selected cells will not be identical, but will have less than 1/5 the normal spectral variation of unselected cells.



Illumination-Current Output Characteristics of Average PHOTRONIC Cells



Typical Illumination-Current Output Characteristics of an RR value cell

MODEL 856 HERMETICALLY SEALED PHOTRONIC CELL

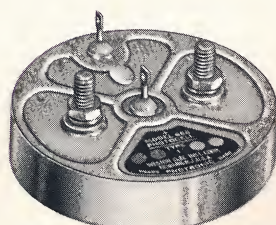
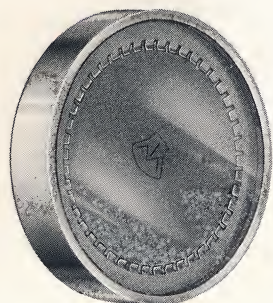
Model 856 is designed for use under adverse, as well as favorable atmospheric conditions. Housed in a metal case, filled with helium and hermetically sealed, it is built to resist the two most serious hazards to any barrier-layer cell . . . moisture and chemical attack. Moisture and corrosive gases are effectively sealed out.

The high thermal conductivity of the helium and the metal case facilitates cooling by water jacket or blower, when necessary. This makes it possible to accommodate higher levels of total radiation without exceeding the recommended maximum cell temperature of 60°C (140°F).

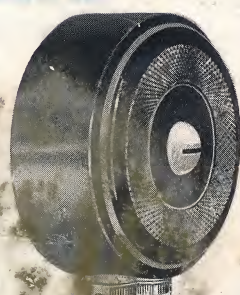
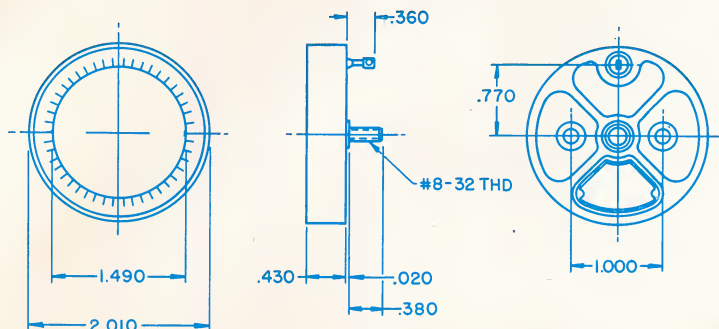
Another advantage of the hermetically sealed cell is a material reduction in fatigue or drift, due to moisture. This characteristic, present to some degree in all cells of this general type, is held to a minimum by the dry, inert atmosphere surrounding the cell element.

The electro-tinned brass case of the Model 856 cell is $\frac{7}{16}$ " deep and 2" in diameter, with two $\frac{3}{8}$ " x 8-32 mounting studs on 1" centers and two terminals on the back. The ends of the terminals are flattened and pierced for easy soldering.

A special Bakelite housing must be used when a cosine filter is used.



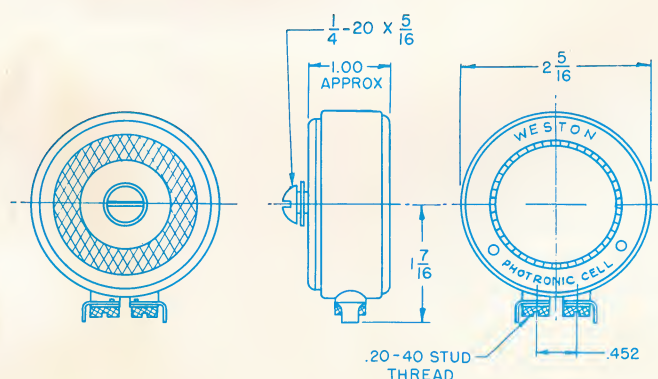
Model 856



Model 594

MODEL 594 PHOTRONIC CELL

Model 594 is available for use where atmospheric conditions are favorable and for interchangeability in existing apparatus. Housed in a bakelite case 1" deep and $2\frac{1}{2}$ " in diameter, it is regularly supplied with threaded terminals and a mounting screw in the center of the back. It can be furnished with prong connections for mounting in a 4 pin UX tube socket.



ORDERING INFORMATION

The customer should make the following information available:

- 1—Model number
- 2— $\mu\text{a}/\text{ft-c}$ and color code from above table
- 3—Specify filter
- 4—Special characteristics
- 5—Special housing
- 6—Special leads or terminals
- 7—For light levels and load resistance, not per table, furnish all details.
- 8—Where possible use suffix to specify features.

SUFFIX LISTING

- | | |
|-------|------------------------------------|
| 1—"Q" | Quartz filter |
| 2—"V" | Viscor filter |
| 3—"I" | Inconel filter |
| 4—"C" | Cosine filter |
| 5—"W" | Weather-proof housing (M-856 only) |
| 6—"L" | Linearity match |
| 7—"O" | Output and linearity match |
| 8—"S" | Spectral selection |

ORDERING SEQUENCE

Model No.	Color Code	Filter	Match or Selection
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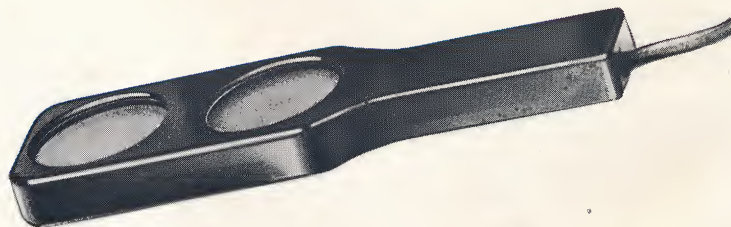
Example: Customer wants 1 set of 3 cells, 0.5 μa per ft-c with Quartz and Inconel filters for a high light measurement, hermetically sealed and matched for output and linearity.

M-856RBQIO quantity 3

LIGHT TARGETS AVAILABLE FOR USE WITH WESTON PHOTOCELLS



Model 856W
Single Cell Mounted
in Weatherproof Housing



Light Target — Model 9950

A weatherproof housing for three cells connected in parallel for low light levels is also available.

Dimensions: Single Cell 3 1/4" dia. x 1 7/16" deep
Three Cell 6" dia. x 2 1/16" deep
Both have 1/2"-14 thread adapter

- Can be provided with one or two cells.
- Cells can be operated in parallel or independent (multi-conductor cable).
- Will accept all filter combinations shown above.
- Size — 2" x 7 1/4" x 5/8"



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